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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,480	09/15/2005	Masahiro Yamakawa	4670-0110PUS1	8164

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BIRCH STEWART KOLASCH & BIRCH  
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FALLS CHURCH, VA 22040-0747

EXAMINER
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REDDY, KARUNA P

ART UNIT	PAPER NUMBER
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1796

NOTIFICATION DATE	DELIVERY MODE
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04/26/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/549,480	<b>Applicant(s)</b> YAMAKAWA ET AL.	
	<b>Examiner</b> KARUNA P. REDDY	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 11 and 14-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11 and 14-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/1/2010</u> .  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/5/2010 has been entered.

Claims 1-10 and 12-13 are cancelled; and claim 11 is amended. Accordingly, claims 11 and 14-17 are currently pending in the application.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claim Rejections - 35 USC § 103***

3. Claims 11, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakayama et al (WO 03/036744) in view of Nissen et al (US 6,341,057 B1).

Prior to setting forth the rejection, it is noted that WO 03/036744 (WO) is being utilized for date purposes. However, since WO is not in English, US equivalent for WO, namely Nakayama et al (US 7,316,864 B2) is referred to in the body of rejection below. All column and line citations are to the US equivalent.

Nakayama et al disclose slurry composition (abstract) en route to their use in electrochemical capacitors (col. 8, lines 65-66). Evidence that electrochemical

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capacitors are alternatively referred to as double layer capacitors comes from Nissen (col. 1, lines 16-18). The electrode comprises a mixed material layer comprising at least a binder and an active material for electrode, which layer is bound to a collector (col. 9, lines 43-46) which reads on current collector of instant claims. Specific examples of the active material used for a positive/negative electrode includes active carbon (col. 9, lines 1-3) which reads on carbonaceous material of instant claim 11. The mixed material layer of the electrode optionally comprises other ingredients such as thickening agent (col. 9, lines 63-67; col. 10, lines 1-2) which reads on thickener of instant claim 16. Specific examples of electrolyte include lithium salts such as  $\text{LiClO}_4$  and the like (col. 10, lines 53-58).

The binder comprises polymer (Z) having a glass transition temperature in the range of  $-80$  to  $0^\circ\text{C}$  (see claim 13 of Nakayama). See Table 3, wherein polymer Z-5 comprises 82 mol% of butyl acrylate (i.e. reads on monomer (a) and its wt%), 15 mol% of acrylonitrile (i.e. reads on monomer (b) and its wt%), 2 mol% of methacrylic acid (i.e. reads on monomer (d) and its wt% in dependent claim 14), and 1 mol% of diethylene glycol dimethacrylate (i.e. reads on monomer (c) and its wt%).

Nakayama et al differ with respect to the electrolyte.

However, Nissen et al teach double layer capacitors (abstract) comprising current collectors, carbon electrodes with a polymer binder (col. 3, lines 36-39). The double layer capacitors based on tetraalkyl-ammonium salts have a high capacitance and higher power capability than double layer capacitors using electrolyte compositions of others like lithium salts. The formation of the interface layer appears highly dependent on ionic species of the electrolyte. The excellent performance of double layer capacitors on tetraalkyl-ammonium salts is ascribed to little, thin, stable and dense

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interface layers being formed at the electrode-electrolyte interface of such capacitors, allowing a narrow charge separation and a high capacitance. Examples of tetraalkyl ammonium salts include tetraethylammonium tetrafluoroborate and tetraethylammonium hexafluorophosphate (col. 4, lines 34-67). Therefore, in light of the teachings in Nissen et al, it would have been obvious to one skilled in art at the time invention was made to use the electrolytes of Nissen et al in the electrochemical capacitor (i.e. electric double layer capacitor) of Nakayama et al, for above mentioned advantages.

It is noted that Nakayama et al qualifies as a prior art under 103(a) based on 102(a). Given that the instant application claims foreign priority to JP 2003-074563 (filed 3/18/2003), the rejection can be overcome by perfecting the foreign priority filing date. The filing date of priority document is not perfected unless applicant has filed a certified priority document in the application (and an English language translation, if the document is not in English) (see 37 CFR 1.55(a)(3)) and the examiner has established that priority document satisfies the enablement and description requirements of 35 U.S.C. 112, first paragraph. In the present case, applicant has not provided an English language translation of the foreign priority application.

4. Claims 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakayama et al (WO 03/036744) in view of Nissen et al (US 6,341,057 B1) and Kasuke (JP 08-107047).

The discussion with respect to Nakayama et al in view of Nissen et al in paragraph 3 above is incorporated here by reference. In addition, the electrode optionally comprises other ingredients such as electrical conductivity-imparting material

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(col. 9, lines 63-67; col. 10, lines 1-2) which reads on electroconductivity supplying agent of instant claim 17.

Nakayama et al and Nissen et al are silent with respect to carbonaceous material comprising active carbon having a specific surface area of  $30 \text{ m}^2$  or more.

However, Kasuke teaches an electric double layer capacitor where in the specific surface area of an active carbon material used as an anode and cathode is specified as  $1000 \text{ m}^2/\text{g}$  to  $2500 \text{ m}^2/\text{g}$ , and  $500 \text{ m}^2/\text{g}$  to  $1500 \text{ m}^2/\text{g}$  respectively. These surface areas are specified to improve the capacitor output capacity (abstract). Therefore, in light of the teachings in Kasuke, it would have been obvious to one skilled in the art at the time invention was made to use carbonaceous material comprising active carbon having surface area between 500 to  $2500 \text{ m}^2/\text{g}$  in the binder composition of Nakayama et al in view of Nissen et al, for improving capacitor output capacity.

### ***Response to Arguments***

5. The rejections under 35 U.S.C. § 103, as set forth in paragraphs 3 and 4 of the preceding office action mailed 11/4/2009, are hereby overcome in light of the amendments and applicant's arguments filed 3/1/2010.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KARUNA P. REDDY whose telephone number is (571)272-6566. The examiner can normally be reached on Monday-Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Karuna P Reddy/  
Examiner, Art Unit 1796